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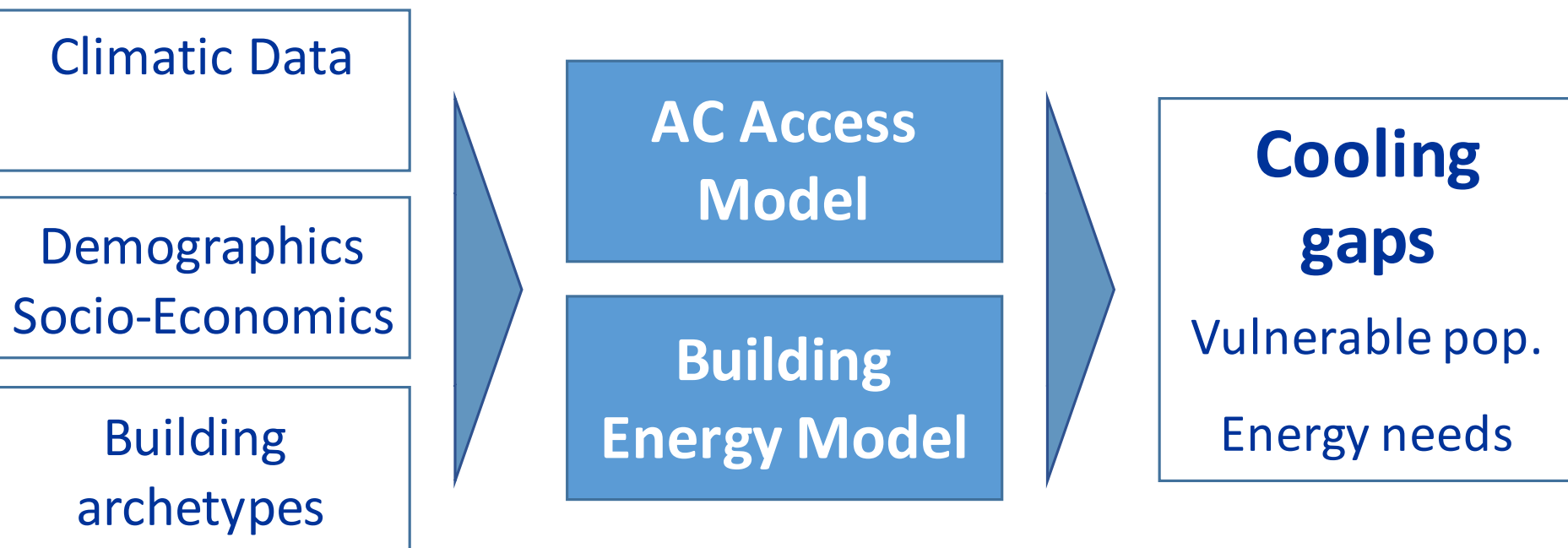
## Introduction

The Global South is increasingly exposed to severe climatic conditions with major risks for health and well-being of population. **Lack of basic thermal comfort**, due to insufficient access to space cooling, is more frequently considered a dimension of energy poverty, despite being overlooked by the Sustainable Development Goals (SDG) framework.

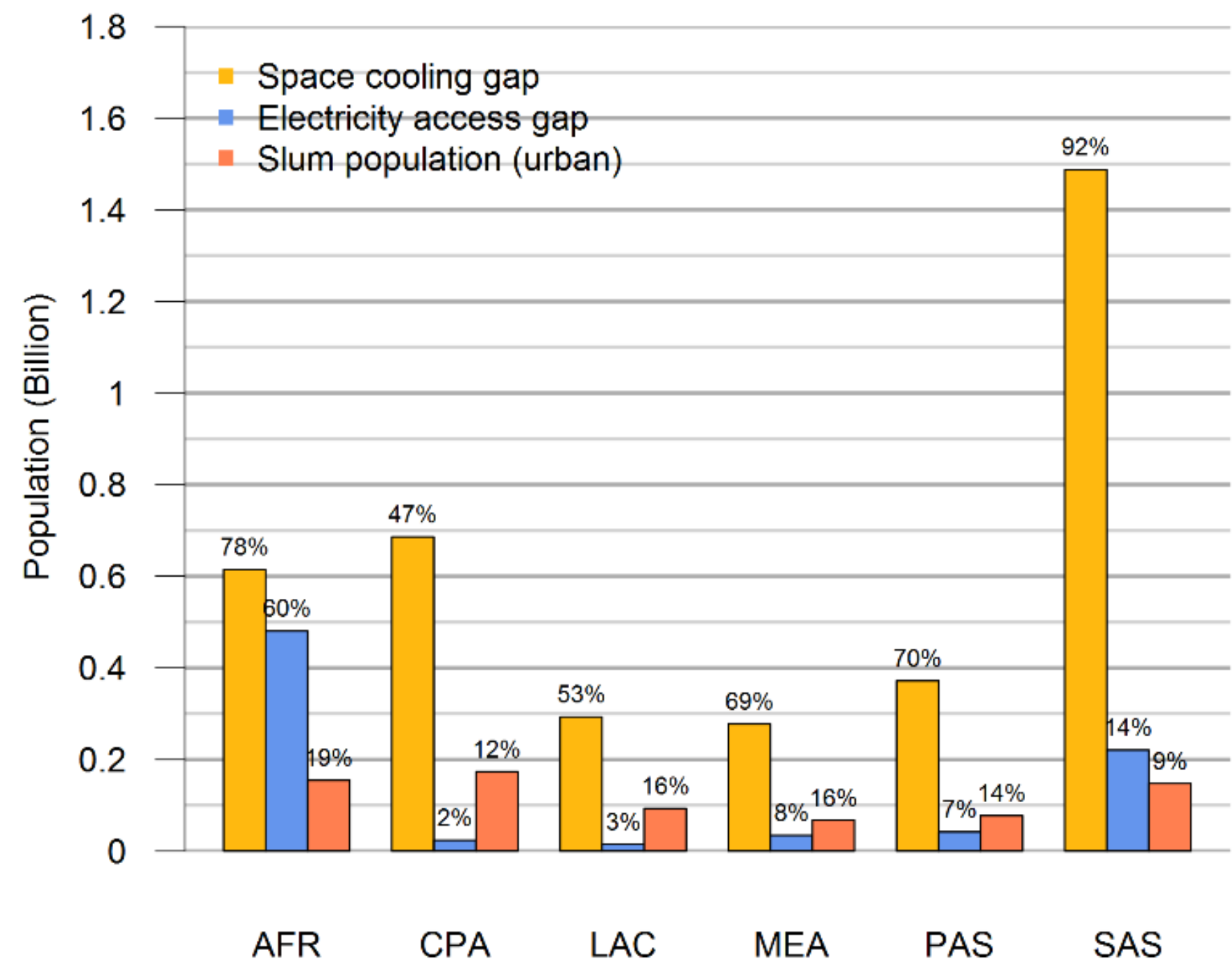
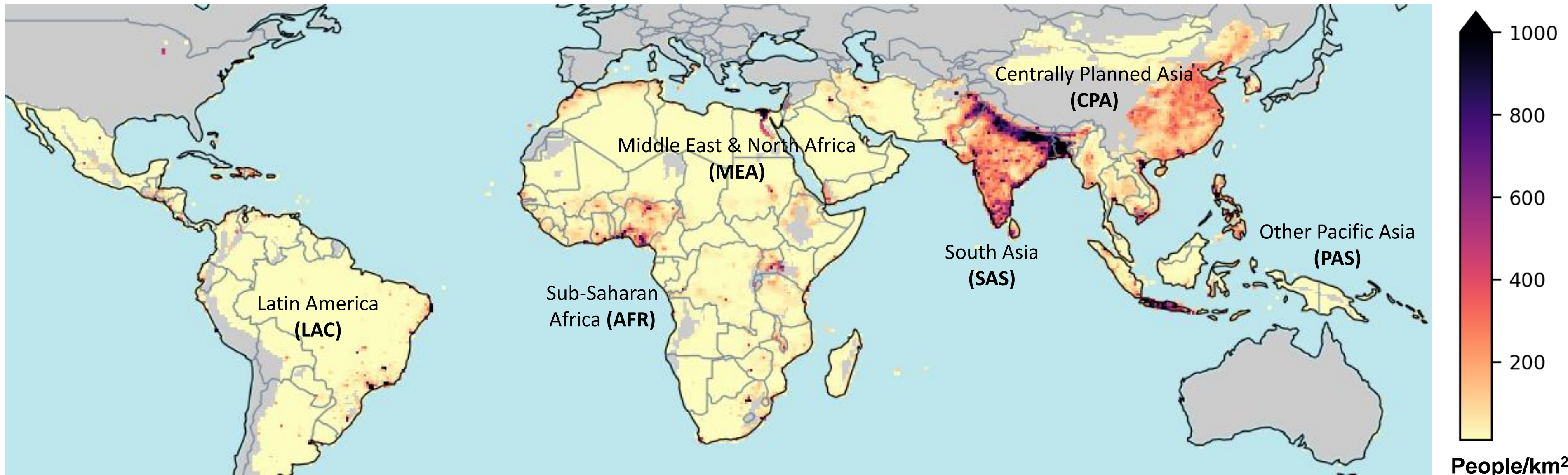
We estimate the **potential exposure to heat stress of populations** across the Global South and **energy requirements to bridge the space cooling gap**.

## Methods

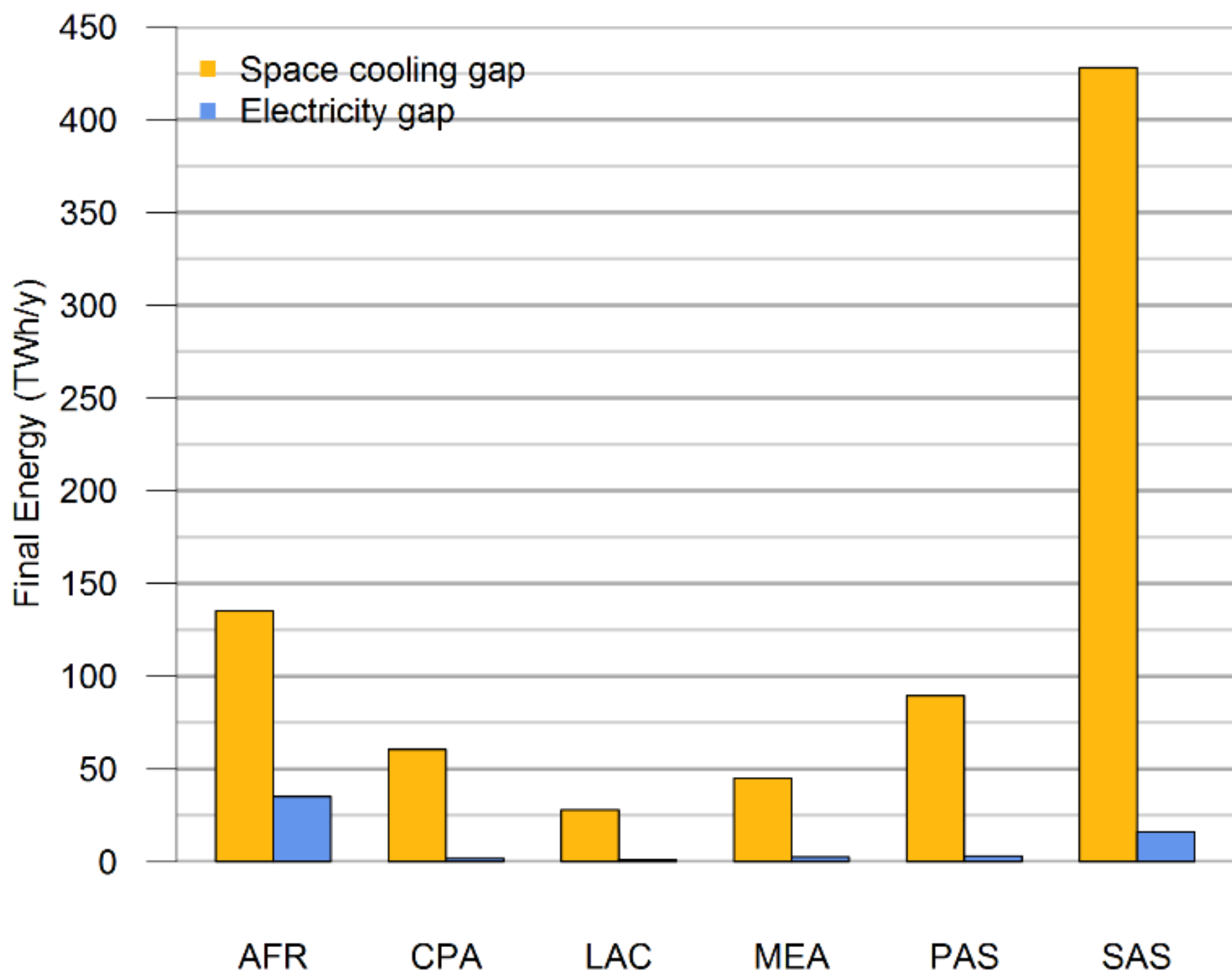
We combine a **variable degree-days** model applied on a spatially-explicit global grid and an **air-conditioning (AC) adoption** model to estimate energy requirements for residential indoor thermal comfort on a spatial-explicit grid.



## Results: space cooling gap



Population lacking space cooling, electricity access and urban slum population. Share on total population reported on top of the bars (share of slum is on urban pop.). Source: Mastrucci et al, 2019. Indoor set point temp. 26°C. Electricity access and slum population data from World Bank.



Space cooling energy gaps and basic electricity access gaps. Source: Mastrucci et al, 2019. Indoor set point temp. 26°C. Tier 2 threshold of household electricity supply (200 Wh/day) assumed for basic electricity access (Bhata et al., 2015).

**Cooling gap:**  
**1.8 – 4.1**  
billion people  
in the Global South

**14%**  
of global residential  
electricity consumption  
median growth required to bridge  
the gap using fans and AC

## Conclusions

**Cooling gaps are much larger**, in both population and energy requirements terms, **than the current energy poverty gap for electricity access (SDG7)**. Important interactions also exist between meeting cooling gaps and achieving other SDGs.

**Broad strategies** encompassing access to efficient cooling systems, low-cost and energy efficient housing, and improved urban design are urgently needed to limit environmental burdens.

Addressing cooling gaps is therefore **key to designing sustainable development policies** in several domains.

## References

**Mastrucci et al. (2019)** Improving the SDG energy poverty targets: residential cooling needs in the Global South, Energy and Buildings, 186, pp. 405-415.

**Hamza-Goodacre et al. (2018)** Chilling Prospects: Providing Sustainable Cooling for All (SEforALL Report).

**Bhatia & Angelou (2015)** Beyond Connections Energy Access Redefined, Technical Report 008/15.

## Strategies to bridge the gap and interaction with SDGs

